Claims

1. Separator material for forming a separator for a lead-acid accumulator, wherein the separator material (6) comprises a first layer in the form of a microporous sheet (1), which is made of a thermoplastic and has a number of protrusions (2, 2'), each defining an area of increased film thickness, on at least one face of a base sheet, and at least one second layer in the form of a planar fleece material (7) which is located on a face of the sheet (1) having such protrusions (2, 2'), and wherein the at least one planar fleece material (7) is bonded to the sheet (1) by a number of welded joints (8) such that the planar fleece material (7) is located at least at the level of the surface of the base sheet in the area of the welded joints (8) and does not penetrate into this.

2. Separator material according to claim 1, characterized in that the planar fleece material (7) is bonded to at least some of the protrusions (2') of the film (1) by the welded joints (8).

3. Separator material according to claim 1 or claim 2, characterized in that the protrusions (2, 2') comprise ribs (2, 2') which run vertically and extend over the entire length of the separator material (6).

4. Separator material according to claim 3, characterized in that the ribs (2, 2') which run vertically each comprise a rib (2') in each of the two side edge areas (5) of the

separator material (6) and the welded joints (8) comprise weld seams (8) which run on these two side ribs (2').

5. Separator material according to claim 4, characterized in that the two side ribs (2') are continuous ribs and the weld seams (8) are continuous weld seams.

6. Separator material according to claim 4, characterized in that the two side ribs (2') are discontinuous ribs and the weld seams (8) are discontinuous weld seams.

7. Separator material according to claim 1 or claim 2, characterized in that the welded joints (8) are spot-welded joints.

8. Separator material according to one of the preceding claims, characterized in that the microporous sheet (1) is made of a polyolefin.

9. Separator material according to claim 8, characterized in that the polyolefin has a molecular weight of at least 300,000, a melt index under normal conditions of substantially 0 and a viscosity number of not less than 600 ml/g.

10. Separator material according to claim 9, characterized in that the polyolefin is polyethylene.

11. Separator material according to claim 10, characterized in that the microporous film (1) is produced from polyethylene having a filler content of silica.

12. Separator material according to one of the preceding claims, characterized in that at least 50 % of the pores of the microporous film (1) have a diameter of 0.5 µm or less.

13. Separator material according to one of the preceding claims, characterized in that the microporous sheet (1) has a thickness of from 0.1 to 0.6 mm in areas without protrusions (2, 2').

14. Separator material according to one of the preceding claims, characterized in that the fleece material (7) substantially consists of glass fibres.

15. Separator material according to one of claims 1 to 13, characterized in that the fleece material (7) substantially consists of polyester fibres.

16. Separator material according to one of claims 1 to 13, characterized in that the fleece material (7) comprises a mixture of glass fibres and polyester fibres.

17. Separator material according to claim 16, characterized in that the content of glass fibres in the mixture is not more than 70 wt.%.

18. Separator material according to one of the preceding claims, characterized in that the fleece material (7) has a thickness of from 0.1 to 0.25 mm.

19. Process for the production of a separator material (6) for forming a separator for a lead-acid accumulator, according to one of claims 1 to 18, with the steps:
    (a) provision of a microporous sheet (1), which is made of a thermoplastic and has a number of protrusions (2, 2'), each defining an area of increased sheet thickness, on at least one face of a base sheet,
    (b) provision of at least one planar fleece material (7),
    (c) location of the at least one planar fleece material (7) on a face of the sheet (1) having such protrusions (2, 2') and
    (d) welding of the at least one planar fleece material (7) with at least some of the protrusions (2') of the sheet(1), such that the planar fleece material (7) is located at least at the level of the surface of the film base sheet in the area of the welded joints (8) and does not penetrate into this.

20. Process according to claim 19, characterized in that the welding takes place by means of ultrasonic welding.

21. Process according to claim 19 or claim 20, characterized in that at least some of the protrusions (2, 2') of the microporous sheet (1) have a height of from 0.5 to 0.6 mm and the welding takes place with these protrusions (2').

22. Process according to one of claims 19 to 21, characterized in that the fleece material (7) has a thickness of from 0.1 to 0.25 mm.